

**Generation IV Roadmap NERAC Subcommittee (GRNS) Meeting
May 30-31, 2001
Meeting Report**

The GRNS met at the Massachusetts Institute of Technology with the Roadmap Integration Team and Co-chairs of the Near Term Deployment, Evaluation Methodology, and Fuel Cycle Crosscut Working Groups.

The next meeting of the GRNS is scheduled for September 20-21, 2001 in Washington, DC.

Key Items Discussed:

- 1) **NERAC Meeting April 30-May 1, 2001/Technology Goals.** N. Todreas summarized the presentation he made at the meeting and the comments received from NERAC members on the technology goals for Generation IV systems. The goals version discussed had incorporated the resolution of Generation IV International Forum (GIF) comments. Comments focused on the definition of effective fuel utilization, which does not necessarily endorse reprocessing. A better modifier than "effective" might be "optimization". It was noted that "optimization" appears in the text below SU-1. The end result was that DOE, based on the NERAC discussion has accepted the final GRNS version of the goals (Document Control Number GG01-07) and will promulgate the final version of the goals to GIF members. The final version of the goals will be put on the Generation IV public web site maintained by DOE. It was agreed that the GRNS will not revisit the goals for at least 9 to 12 months.
- 2) **Joint Technical Working Group (TWG) Meeting May 7-10, 2001.** N. Todreas and RIT members in attendance provided feedback on their impressions of the meeting. Overall it was successful, with the international members of the TWGs participating in the Generation IV Roadmap activities for the first time. It was decided that the GRNS members will follow the activities of all TWGs to the extent practical, including attending their meetings. Assignments of GRNS members to track activities of each TWG, the Near Term Deployment Group (NTDG), Evaluation Methodology Group (EMG), and Fuel Cycle Crosscut Group (FCCG) were made (Attachment).
- 3) **Near Term Deployment Working Group (NTDG) activities.** T. McConnell (Co-chair) presented the recent and future activities of the NTDG.
 - The Near Term Deployment Action Plan has been forwarded to GRNS and DOE by the NTDG co-chairs. GRNS provided comments on the Plan and is awaiting receipt of the final version which it will then endorse to the DOE. DOE needs to advise NTDG and GRNS how they intend to use the Action Plan.
 - The NTDG final report is due to DOE September 30, 2001. GRNS members reviewed the outline for the report and suggested that the report include a clear statement of the elements of the near term deployment roadmap, including budget needs and schedule. The near term deployment roadmap should be labeled as preliminary because it will need to incorporate DOE and NRC analysis. The report should also include a statement about the overlap from near term deployment to long term Generation IV goals. DOE has asked GRNS to review and comment on the Near Term Deployment

Group report before it is submitted in final form to DOE. A summary of the GRNS recommendations to the NTDG is attached.

- 3) **Evaluation Methodologies Working Group (EMG).** W. Rasin and J. Roglans presented the current status of EMG activities. Comments received from the TWGs at the Joint TWG meeting held May 7-10, 2001 have been incorporated into the criteria and metrics statements associated with the "Screening for Potential" phase of concept evaluation currently underway. Not all comments were submitted in written form, so R. Bennett agreed to contact TWG co-chairs to ensure all their concerns expressed at the May 7-10 meeting have been addressed. It was recommended that the RIT, rather than the working groups, should receive and assess any feedback from proponents of rejected concepts after screening steps are completed. The GRNS also recommended that the RIT and the EMG provide more guidance on the screening process to the TWGs. A summary of the GRNS recommendations is attached. W. Rasin desires to complete the draft of the final screening approach and have GRNS review it before presenting it to the TWGs at their next joint meeting scheduled for August 21-23, 2001.
- 4) **Fuel Cycle Cross-cutting Group (FCCG).** D. Wade (Argonne National Laboratory) presented the current status of the FCCG activities. GRNS provided several recommendations for the FCCG to consider (attached).
- 5) **International Participation in Generation IV Activities.** The OECD Nuclear Energy Agency (NEA) has been invited by DOE to take a management role of certain activities in the Generation IV program. NEA is to provide the Secretariat role for the gas and liquid metal coolant TWGs, among other things. DOE will provide oversight of the NEA and other international roadmap participants. GRNS (Todreas, Levy) was provided with a draft agreement between DOE and NEA on NEA's role in the Generation IV activities for review and comment.
- 6) **Crosscutting areas.** The need for and areas requiring additional crosscuts were discussed. It was agreed that the following crosscut groups need to be formed in addition to the fuel cycle group, which has already been formed:
 - Materials
 - Risk and Safety
 - Energy ConversionA discussion on new fuel cladding materials led to the conclusion that it should be addressed by the FCCG. Also, a discussion on economics was inconclusive. T. Marston, D. Kammen and the EMG co-chairs will discuss the NTDG economics approach and make a recommendation. A decision on adding an economics crosscut group was tabled. It was also agreed to discuss a risk-based regulatory structure with NEI and make a recommendation on it later (Todreas). The risk-based regulatory activities should be mentioned in the Roadmap in any case.
- 7) **Roadmap Preparation Schedule.** The RIT discussed the Roadmap content and schedule for completion of the first draft, interim and final Roadmap. GRNS asked for specific information on activities involving GRNS review of roadmap team products and deliverables, to ensure adequate review time is included. GRNS also recommended that the Roadmap schedule be resource loaded.

Information Items:

- At the Nuclear Energy Assembly meeting last week, Nuclear Energy Institute President Joe Colvin reported on Vision 2020, which predicts 50,000 MWe of new nuclear generating capacity will be needed in the U.S. by 2020. Details are available on the NEI website, www.nei.org.
- NERAC (Ahearne, et al) has initiated a review of the DOE Nuclear Energy Research Initiative (NERI) program. N. Todreas has been asked to participate. One of the areas of inquiry is how NERI project results will feed into the Generation IV R&D program.
- The Nuclear Regulatory Commission (NRC) Advisory Committee on Reactor Safety (ACRS) meets June 4-5, 2001 in Washington, DC to discuss advanced reactor systems. DOE will be making presentations on the Generation IV program and N. Todreas will present the Goals. Several near term deployment reactor concepts will also be presented by the designers.

Attachment
GRNS Liaison Assignments to Technical Working Groups

<u>Technical Working Group</u>	<u>Primary GRNS Liaison</u>	<u>Secondary GRNS Liaison</u>
Water	B. Abrams	D. Chapin
Gas	W. Sproat	D. Kammen
Liquid Metal	T. Marston	
Non-classical	N. Todreas	
Evaluation Methodology	S. Levy	
Fuel Cycle Crosscut	J. Garrick	D. Kammen
Near Term Deployment	D. Chapin	B. Abrams
Joint TWG Meeting (Seattle, WA Aug. 21-23, 2001)	S. Levy	

Actions assigned to GRNS liaison members:

1. Establish contact with the TWG co-chairs to become aware of their activities and issues.
2. Get access to desired TWG list server and ANL Generation IV web site TWG information (John Ryskamp to set up).
3. Review assigned TWG work products. The next major work products include the TWG concept screening for potential reports on July 31, 2001.
4. Coordinate GRNS review on TWG work products and provide written feedback to co-chairs.

GRNS Recommendations to Near Term Deployment Group
May 31, 2001

1. Develop list of items to be managed. Include vendor competitiveness.
2. Do not overtly apply the Generation IV goals to the near term submission.
3. Ensure the report reflects the near term roadmap, schedule and preliminary budget (funding needs).

GRNS Recommendations to Roadmap Integration Team and Evaluation Methodology Group
May 31, 2001

Issue: Concept screening process needs to be consistent.

Rec. RIT/EMG provides additional written guidance to ensure consistency. Specifically address how TWGs should:

- Perform the screening process, including a) timing and strategy for screening losers, b) the necessary scope of documentation regarding screening decisions, and c) consistent treatment of uncertainty.
- Deal with sets compared to individual concepts.
- Address incompletely described concepts.
- Take advantage of the opportunity to mix and match ideas to create synthesized new concepts.
- Treat intellectual property.
- Manage their available resources throughout the screening for potential phase and the final screening phase of concept evaluation.
- Remember the ultimate goal – a portfolio of 4-8 concepts to retain and their R&D needs.

GRNS Recommendations to Fuel Cycle Crosscut Group
May 31, 2001

1. Look for new and innovative ideas to improve fuel cycle concepts and timing, with respect to repository performance, spent fuel form, proliferation resistance, and shipping.
2. Mass flow scenarios need to be broadened, to include analysis of radiation, proliferation resistance, and economics.
3. Put caveats and linkages at the front of the report.
4. Add a member of the Water TWG to the FCCG.
5. Delete reference to Generation III in the report. Rather, address the currently deployed light water reactors.